Parameters of climate change monitored by Meteorological Department

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Will the Minister of EARTH SCIENCES be pleased to state the parameters of climate changes being monitored by our Meteorological and related departments and what important observations, aberrations, have been reported by them?

THE MINISTER OF EARTH SCIENCES (SHRI KAPIL SIBAL): India Meteorological Department (IMD) has been monitoring several parameters like temperature, rainfall, humidity and pressure for monitoring climate change over more than 100 years through a network of stations all over India. Atmospheric turbidity is measured from mid-seventies. Acidic component of atmosphere emanating from the Industrial emissions manifested in the form of acidic components of sulphates and nitrates in rainwater has been monitored for the last 30 years. The Survey of India (Sol) has been monitoring sea-level through its net-work of tide-gauges installed over the Indian coasts. The important observations reported based on the analysis of the available data are:—

i. Measurements of atmospheric turbidity (attenuation of incoming solar radiation) has shown a steady increase as a result of anthropogenic activities.

ii. Analysis of chemical composition of rainwater has also shown increasing acidic content in many parts of the country as a consequence of increased industrial/vehicular activity ($S0_2$ and NOx)

iii. Although, total column ozone has not shown any significant variation, a moderate increase in low level ozone concentrations is observed as a result of pollutants.

iv. Mean annual surface air temperatures show a significant warming of about 0.5 degree C during the last century and recent data indicates a substantial acceleration of this warming after the 1990's.

v. The spatial distribution of temperature changes indicated a significant warming trend observed along the west coast, central India, and interior Peninsula and over northeast India. However, cooling trend has been observed over northwest Indian and some parts in southern India.

vi. The year 2006 was the warmest year on record since 1901. The ten warmest years on record are 2006, 2002,2007, 1998,2004,2001,2003, 1958, 1987 and 1941.

vii. As per the analysis of recent 50 year, rainfall data on regional scale, it indicates an increasing trend in intense rainfall events over east-central, India along with decrease in number of rainy days. However, on all India scale, the monsoon season rainfall quantum does not show any long term trend.

viii. Indian scientists have studied local sea level rise at various places from long-term Indian Tide gauge data, which indicates the observed trends during the past century to be about-1 mm/year.